

REMARKS1. Present Status of the Application

In response to the Office Action dated March 8, 2004, Applicants respectfully request reconsideration based on above claim amendments and the following remarks. Upon entry of the amendments in this response, claims 1, 3, 5-10 and 17-20 remain pending in the present application. Applicants respectfully submit that the claims as presented are in condition for allowance.

2. Election/Restriction Requirements

In Applicants' response, mailed January 20, 2004, Applicants elected with traverse Claim Group I (claims 1-10 and 17-20). Applicants acknowledge that a complete reply to a final rejection must include an appropriate action under 37 C.F.R. 1.144 with regard to the nonelected claims or Group II (claims 11-16 and 21-26). At present, however, Applicants respectfully reassert that the restriction requirement is untimely and is traversed for the reasons stated in Applicants previous response dated January 20, 2004.

3. Rejection of Claims 1-10 and 17-20 Under 35 U.S.C. §102(e)

Claims 1-10 and 17-20 were rejected under §102(e) as being allegedly anticipated by *Chen* (U.S. Patent No. 6,256,383). For a proper rejection of a claim under 35 U.S.C. Section 102, the cited reference must disclose each element of the claim. *See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983).

a. Claim 1

As provided in independent claim 1, Applicants claim:

1. A transceiver, comprising:
 - means for receiving a locally generated transmit signal;
 - means for coupling the locally generated transmit signal to a communication medium, the means for coupling further coupled to a remotely generated receive signal; and
 - a multi-stage digital filter comprising a dual-stage finite impulse response (FIR) filter, the multi-stage digital filter configured to reduce both short-term echo components and long-tail echo components of the locally*

generated transmit signal wherein the reduction of transmit signal echo is realized in a hybrid echo canceller.

(Emphasis added).

Applicants respectfully submits that independent claim 1 is allowable for at least the reason that *Chen* does not disclose, teach, or suggest anywhere in the specification or in the figures at least the feature of “a dual stage finite impulse (FIR) filter . . . configured to reduce both short-term echo components and long-tail echo components,” as recited in claim 1. Rather, *Chen* discloses an “automatic balance system 10 which includes an FIR filter system 32 and non-adaptive IIR filter system 40.” Col. 5, lines 39-42 (Emphasis added). Therefore, *Chen* fails to disclose, teach, or suggest a “dual stage finite impulse (FIR) filter” and does not anticipate claim 1. Hence, the rejection of claim 1 should be withdrawn for at least this reason alone.

b. Claim 2

Without addressing the validity of the rejection, claim 2 has been canceled, and its subject matter has been incorporated into claim 1.

c. Claim 3

Because independent claim 1 is allowable over the prior art of record, dependent claim 3 (which depends from independent claim 1) are allowable as a matter of law for at least the reason that dependent claim 3 contains all the elements and features of independent claim 1. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

d. Claim 4

Without addressing the validity of the rejection, claim 4 has been canceled, and its subject matter has been incorporated into claim 1.

e. Claims 5-10

Because independent claim 1 is allowable over the prior art of record, dependent claims 5-10 (which depend from independent claim 1) are allowable as a matter of law for at least the reason that dependent claims 5-10 contain all the elements and features of independent claim 1.

Additionally and notwithstanding the foregoing reasons for allowability of independent claim 1, dependent claim 5-10 recite further features and/or combinations of features (as is apparent by examination of the claim itself) that are patentably distinct from the prior art of record. For example, with regard to claim 8 (from which claims 9-10 depend), the feature “wherein the second stage uses an interpolation scheme to determine coefficients to apply at each of the taps disposed between taps associated with a derived coefficient,” as recited in claim 8, is not disclosed or suggested by *Chen*. (Emphasis added).

Accordingly, the rejection of claims 5-10 should be withdrawn.

f. Claim 17

As provided in independent claim 17, Applicants claim:

17. A digital signal transceiver, comprising:
a transmitter configured to receive a locally generated transmit signal;
a hybrid electrically coupled to the transmitter configured to receive and inductively couple the transmit signal to a two-wire transmission line, the hybrid further configured to receive a remotely generated receive signal along the two-wire transmission line;
a receiver configured to process the remotely generated receive signal; and
an echo canceller disposed in parallel between the transmitter and the receiver configured to reduce both short-term echo components and long-tail echo components of the locally generated transmit signal *wherein the echo canceller calculates coefficient values for less than N taps while emulating a N tap digital filter*.

(Emphasis added).

Applicants respectfully submits that independent claim 1 is allowable for at least the reason that *Chen* does not disclose, teach, or suggest anywhere in the specification or in the figures at least the feature “wherein the echo canceller calculates coefficient values for less than N taps while emulating a N tap digital filter,” as recited in claim 17. Rather, *Chen* discloses an “automatic balance system 10 which includes an FIR filter system 32 and non-adaptive IIR filter system 40” where coefficients values are calculated for each tap of an N tap digital filter. See col. 5, lines 39-42; col. 7, lines 46-51; col. 8, lines 49-58; col. 9, lines 34-37; and col. 10, lines 1-11. Further, *Chen* states that an “integrator system 90 . . . serves to generate the filter

coefficients (wk,n) of the respective FIR taps 58” for the FIR filter system 32 and an “integrator system 130 . . . serves to generate the filter coefficients of the respective IIR filter tap 98” for the non-adaptive IIR filter system 40. *See* col. 7, lines 46-51; and col. 9, lines 34-37. Therefore, *Chen* fails to disclose, teach, or suggest a feature “wherein the echo canceller calculates coefficient values for less than N taps while emulating a N tap digital filter” and does not anticipate claim 17. Hence, the rejection of claim 17 should be withdrawn for at least this reason alone.

g. Claims 18-20

Because independent claim 17 is allowable over the prior art of record, dependent claims 18-19 (which depend from independent claim 17) are allowable as a matter of law for at least the reason that dependent claims 18-20 contain all the elements and features of independent claim 17.

Additionally and notwithstanding the foregoing reasons for allowability of independent claim 17, dependent claim 18 (from which claims 19-20 depend) recites further features and/or combinations of features (as is apparent by examination of the claim itself) that are patentably distinct from the prior art of record. For example, the feature “wherein the echo canceller comprises a bifurcated digital filter that . . . adaptively calculates and applies a subset of tap coefficient values to a plurality of filter taps in a second stage,” as recited in claim 18, is not disclosed or suggested by *Chen*. (Emphasis added). In contrast, *Chen* discloses an “automatic balance system 10 which includes an FIR filter system 32 and non-adaptive IIR filter system 40.” Col. 5, lines 39-42 (Emphasis added). Therefore, *Chen* does not disclose, teach, or suggest all of the features of claim 18, and the rejection of claims 18-20 should be withdrawn for at least this reason alone.

4. Cited Art Made of Record

The cited art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 1, 3, 5-10, and 17-20 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned agent at (770) 933-9500.

Respectfully submitted,



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